UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

IN RE: FRESENIUS GRANUFLO/NATURALYTE DIALYSATE PRODUCTS LIABILITY LITIGATION

This Document Relates to:

Mervin Boyd, Individually and as Wrongful Death Beneficiary of Judith Boyd, Case No. 1:13-cv-11717-DPW;

Daniel Carter, Individually and on Behalf of the Wrongful Death Beneficiaries of Anniece Carter, Case No. 1:13-cv-12459-DPW;

Joyce Marie Clark, Individually and on Behalf of the Wrongful Death Beneficiaries of Edward Lee Jenkins, Case No. 1:13-cv-12460-DPW;

Kathy Dennis as Wrongful Death Beneficiary of Ruth Ann Dennis, Case No. 1:13-cv-12467-DPW;

Gloria Cothern Dunaway, Individually and as Wrongful Death Beneficiary of Betty Sue Cothern, Case No. 1:13-cv-11714-DPW;

Carlotta Jerry, Individually and as Next of Kin of Christopher Jerry, Case No. 1:15-cv-14121-DPW;

Alex Kazos, as Next of Kin and Personal Representative of Estate of Nick Kazos, Case No. 1:15-cv-12376-DPW;

Janice McGhee, Individually and as Wrongful Death Beneficiary of Henry McGhee, Case No. 1:13-cv-13172-DPW;

Michael McNulty, Individually and as Wrongful Death Beneficiary of Willie Enette McNulty,

MDL No. 1:13-MD-2428-DPW

REDACTED FILING

LEAVE TO FILE GRANTED ON SEPTEMBER 15, 2017

Case No. 1:13-cv-12403-DPW;)
)
Kathleen Palmaccio, as Next of Kin and Personal)
Representative of Estate of John Palmaccio,)
Case No. 1:15-cv-12474-DPW;)
)
Sharon Randall, as Next of Kin and Personal)
Representative of Estate of Winfitch Randall,)
Case No. 1:15-cv-12735-DPW;)
)
Amy Riben, Wife, and Max Riben, Husband,)
And Their Marital Community,)
Case No. 1:15-cv-11134-DPW;)
)
Kimberly Ross, Individually and on Behalf of the)
Wrongful Death Beneficiaries of Stella Ross,)
Case No. 1:13-cv-12478-DPW;)
)
Tamika Smith, as Next of Kin and Personal)
Representative of Estate of Cynthia Reed,)
Case No. 1:15-cv-12768-DPW;)
)
Sophia Walker, Individually and on Behalf of the)
Wrongful Death Beneficiaries of Hattie Myles,)
Case No. 1:13-cv-12487-DPW)
_____)

MEMORANDUM IN SUPPORT OF FMCNA'S MOTION FOR SUMMARY JUDGMENT ON THE CLAIMS OF OPT-OUT CASES INVOLVING NON-ARRHYTHMIA EVENTS OR INJURIES NOT PROXIMATE IN TIME TO THE LAST DIALYSIS

Pursuant to Federal Rule of Civil Procedure 56, Defendants, Fresenius Medical Care Holdings, Inc., Fresenius USA, Inc., Fresenius USA Manufacturing, Inc., and Fresenius USA Marketing, Inc. (collectively "FMCNA") submit this memorandum in support of their motion for summary judgment on the claims of: (1) all opt-out plaintiffs who lack evidence that the alleged injury involved an arrhythmia related to an electrolyte shift (rather than another event type, such as sepsis or myocardial infarction), and (2) all opt-out plaintiffs who lack evidence that their alleged injuries were temporally proximate to a dialysis treatment. To date, FMCNA has identified the following 15 opt-out plaintiffs who are subject to this motion (some on both grounds): Mervin Boyd (Judith Boyd); Daniel Carter (Anniece Carter); Joyce Marie Clark (Edward Lee Jenkins); Kathy Dennis (Ruth Ann Dennis); Gloria Cothern Dunaway (Betty Sue Cothern); Carlotta Jerry (Christopher Jerry); Alex Kazos (Nick Kazos); Janice McGhee (Henry McGhee); Michael McNulty (Willie Enette McNulty); Kathleen Palmaccio (John Palmaccio); Sharon Randall (Winfitch Randall); Max Riben (Amy Riben); Kimberly Ross (Stella Ross); Tamika Smith (Cynthia Reed); and Sophia Walker (Hattie Myles).[1]

I. INTRODUCTION

The Hakim Memo that inspired this litigation focused on patients who experienced cardiopulmonary arrest in the dialysis clinic. Likewise, Plaintiffs' theory of general causation only applies when a patient experienced a specific type of cardiac event – an arrhythmia "triggered" by an electrolyte shift. Further, such an arrhythmia can potentially be attributed to

[1] As explained in FMCNA's brief in support of its motion for summary judgment regarding NaturaLyte® opt-out cases, filed on August 23, 2017 (Doc. 1907, at p. 1), FMCNA has identified multiple grounds for dispositive motions in the 18 remaining opt-out cases. Many of the cases are subject to dismissal on more than one ground. All of the plaintiffs that are subject to this motion also are subject to one or more of the three other pending motions for summary judgment FMCNA has previously filed. See Doc. 1906 (cases lacking evidence GranuFlo®, rather than NaturaLyte® was used); Doc. 1913 (cases lacking evidence of elevated serum bicarbonate levels); Doc. 1923 (cases barred by the learned intermediary doctrine).

the acid concentrate only if it occurs during or within the first two hours after dialysis, at most. Thus, the right event type and the right event timing are necessary (but not independently sufficient) elements for any opt-out case seeking to proceed to trial here. A number of the remaining plaintiffs do not satisfy these requirements. Some bring claims involving patients who died, not from an electrolyte-related arrhythmia, but from documented sepsis or myocardial infarctions. Others are pursuing claims involving patients who died in their homes many hours, if not days, after their last dialysis treatment, or otherwise had a prolonged decline that is not consistent with the "sudden" cardiac arrest or death that Dr. Hakim reviewed and that Plaintiffs' experts claim is caused by GranuFlo® and NaturaLyte®. In cases lacking the requisite evidence of an electrolyte-related arrhythmia in close temporal proximity to the last dialysis treatment, Plaintiffs cannot establish causation, and FMCNA is entitled to summary judgment.

II. UNDISPUTED MATERIAL FACTS

A. The Hakim Memo

The genesis of this litigation, and the centerpiece of Plaintiffs' complaint, is the November 4, 2011, memorandum written by Dr. Ray Hakim on "Dialysate Bicarbonate, Alkalosis and Patient Safety." See 2d Amended Master Compl. ¶¶ 208-211 (Doc. 1232). In that memo, Dr. Hakim reviewed data pertaining to 941 patients who experienced cardiopulmonary arrest at FMCNA dialysis clinics and made "findings" regarding their risk for experiencing such an event based on their serum bicarbonate levels. SOF ¶¶ 1-3. Tracking the Hakim Memo, the gravamen of Plaintiffs' complaint is the claim that FMCNA failed to provide sufficient information (most pointedly, Dr. Hakim's "findings") to ensure that GranuFlo® and NaturaLyte® could be used safely with patients undergoing hemodialysis, causing patients to experience "arrhythmia related injuries, cardiopulmonary arrest, and/or sudden cardiac death." See SAC ¶ 2, 208-211, 217, 221-223. As the mechanism of physical harm, Plaintiffs allege that

GranuFlo® and NaturaLyte® contain acetate, which they claim leads "to a dangerous increase in serum bicarbonate levels in patients undergoing hemodialysis," allegedly resulting in alkalosis, which in turn triggers "heart arrhythmia, cardiopulmonary arrest and sudden cardiac death." Id., ¶ 115; see also id., ¶¶ 121-127, 217. Specifically, Plaintiffs allege: "When too much bicarbonate is delivered to the patient, … an electrolyte imbalance can occur. Among other physiological changes, a patient's potassium and calcium may shift on a cellular level, resulting in a significant increase in the potential for an arrhythmia or fibrillation." Id., ¶ 126 (emphasis added).

The Hakim Memo only purported to draw conclusions about hemodialysis patients "who suffered from CP arrest in the facility." SOF ¶ 2; Ex. 1, p. 3 (emphasis added). Indeed, at his deposition, Dr. Hakim testified that the body would no longer be metabolizing acetate 90 minutes after dialysis. SOF ¶ 4.

The Hakim Memo made no attempt to evaluate cardiac arrest, mortality, or other types of events suffered by patients once they leave the clinic and their serum bicarbonate levels would be dropping. Likewise, Plaintiffs' original Master Complaint alleged that treatment with GranuFlo® leads to unexpectedly high serum bicarbonate levels and attendant harm "during dialysis." See Doc. 467-1, ¶ 203.[2]

[2] Plaintiffs later discovered that many of the cases in this MDL did not involve patients who suffered cardiopulmonary arrest "during dialysis" in the clinic but, rather, experienced their events many hours after their treatment had concluded. Similar to their reaction to the discovery that many of their cases involved NaturaLyte® rather than GranuFlo® (see Doc. 1907, pp. 4-5), Plaintiffs opted to amend their pleading and add allegations that there is a "potential for added serum bicarbonate post dialysis as the acetate in the blood continues to metabolize into bicarbonate," rather than dismiss the cases that plainly did not fit their (and Dr. Hakim's) original theory. See SAC ¶ 113.

B. Plaintiffs' Theory of General Causation Requires an Arrhythmia Triggered by Electrolyte Shifts

All of the cardiology experts Plaintiffs retained to support their claim that GranuFlo® and NaturaLyte® are capable of causing injury rely on the Hakim Memo. SOF ¶¶ 5-10. Further, they all opine that the type of cardiac injury allegedly caused by GranuFlo® and NaturaLyte® has an electrical trigger involving rapid shifts in serum bicarbonate and potassium that prevent the heart from beating properly (as opposed to other causes, like an infection or a clot that blocks the flow of blood). For example:

-

  At his deposition, Dr. Akar expressed the opinion that GranuFlo® and NaturaLyte® "have the potential to provide excess acetate, and this excess acetate has the potential to cause significant alkalosis, and alkalosis has the potential to … have a significant effect on ionic channels which has a potential to produce sudden cardiac death." SOF ¶ 13.

-

-
-
-

[3] As discussed further below, Dr. Miles is the only one of Plaintiffs' six cardiology experts to opine that GranuFlo® and NaturaLyte® can be linked to myocardial infarction and stroke, and that opinion is in conflict with Plaintiffs' other experts and Dr. Miles' own testimony that his primary concern is ion fluxes. See pp. 7-8 below.

- At his deposition, Dr. Zipes similarly described the issue in this case as whether GranuFlo® and NaturaLyte® are "capable of creating a metabolic electrolyte imbalance that results in sudden cardiac arrest and ultimately death." SOF ¶ 44.

Plaintiffs' cardiology experts acknowledge that a fundamental distinction exists between an arrhythmia related to an electrolyte shift and an event like a myocardial infarction (heart attack).

At his deposition, Dr. Akar explained that "sudden cardiac arrest" refers to a specific "etiology" of the arrest being "generally electrical in nature," in contrast to "non-electrical reasons, such as … pulmonary embolism." SOF ¶ 15. Dr. Akar testified further, "Even patients who are having active

infarction and a heart attack, those patients you are very hard pressed to get anybody in the medical field to call them an arrest patient. An arrest implies there is, you know, loss of circulation, there is loss of blood pressure, there is loss of respiration, there is generally loss of consciousness…." SOF ¶ 16.

Similarly, at the trial in Dial, Plaintiffs' only case-specific expert witness, nephrologist Dr. Steven Borkan, testified as follows (SOF ¶ 60):

> Q. Myocardial infarction, or heart attack, is when part of the heart muscle is deprived of blood, deprived of oxygen, and becomes damaged, correct?
>
> A. That's correct.
>
> Q. And we've heard it described in this courtroom. A heart attack, a myocardial infarction, is kind of like plumbing; and ventricular fibrillation, or arrythmia, is electrical. Have you heard that analogy before?
>
> A. Yes, sir, I have.

Further, several of Plaintiffs' cardiology experts narrow the relevant type of arrhythmia to ventricular arrhythmias, or those originating in the bottom chambers of the heart. See SOF ¶¶ 27-32, 37, 41. At his deposition, Dr. Eldadah contrasted a ventricular arrhythmia, which involves a "sudden, abrupt bang, falling down," with a "slowing of the heart, which would be gradual and typically reflected by, for instance, a dizziness, lightheadedness, feeling maybe a little bit sluggish for a period of time, and then gradually collapsing or crumpling over." SOF ¶ 27. Dr. Eldadah further acknowledged that there are "different routes" to sudden death, some of which are non-electrical and would not be part of Plaintiffs' theory of causation. Id. For example, a myocardial infarction involves "a blood clot or an occlusion in an artery that feeds the heart muscle" and that ultimately prevents that area of the heart from contracting, potentially causing "changes to the electrical situation of the heart muscle and ventricular arrhythmia" completely independent of the patient's acid-base balance. SOF ¶ 29. In discussing how to

determine whether a patient had a ventricular arrhythmia, he explained that a myocardial infarction and a ventricular arrhythmia injure the heart in different ways. SOF ¶ 29. Further, when a defibrillator is used on a patient who is experiencing cardiac arrest, a "shock" will register if there is a ventricular arrhythmia but not for other rhythms. SOF ¶ 31.

Out of the six cardiologists from whom Plaintiffs submitted expert opinions on general causation, only one, Dr. Miles, purports to opine that GranuFlo® and NaturaLyte® are capable of causing myocardial infarction and stroke. See SOF ¶ 33. Dr. Miles does not opine, however, that the products cause blockages, blood clots, or other non-electrical issues that generally are the hallmark myocardial infarction. Rather, at his deposition, he confirmed that his concern is the same one expressed by Plaintiffs' other experts – the specific trigger of electrolyte shifts:

> [A]n issue with dialysis from the cardiac perspective is that you are changing things very quickly…. The potassium changes quickly. The bicarbonate changes quickly. The calcium changes quickly. The sodium changes quickly. The fluid, the volume of blood changes quickly. And all those things do put a stress on the body, but especially the heart. The things that I worry about the most are ion fluxes, so chiefly potassium, because once the potassium starts to drop with dialysis, the risk of arrhythmia goes up significantly, atrial fibrillation, ventricular tachycardia, sudden death from that.

SOF ¶ 35; Ex. 9, Miles Dep., 173:8-20 (emphasis added).

Unlike some of Plaintiffs' other cardiology experts, Dr. Miles is not a specialist in electrophysiology. SOF ¶ 36. Moreover, when asked what research, data, or papers he relied on to support his ultimate opinion, he cited the Hakim Memo "and prior Fresenius documents." SOF ¶ 8. Of course, the Hakim Memo is focused on in-center cardiopulmonary arrest events and does not address myocardial infarctions or strokes. SOF ¶ 2. Likewise, the SAC does not allege that the products caused myocardial infarctions, strokes, or any non-arrhythmic cardiac event, or that there was a duty to warn of any risk for such events. See Doc. 1232.

C. The Arrhythmia Must Occur During or Shortly After Dialysis

The electrolyte shifts that Plaintiffs' experts cite as a "trigger" for arrhythmias – a rapid

increase in serum bicarbonate and resulting decrease in serum potassium – occurs within a narrow window of time that is closely proximate to the dialysis treatment itself. "Rapid" shifts in electrolytes, which occur during dialysis, are central to Plaintiffs' cardiology experts' opinions. SOF ¶¶ 12, 20, 24, 34, 39, 42; see also SOF ¶ 14, Ex. 4, Akar Dep., 69:11-21 (the type of shifting of potassium across membranes that can trigger an arrhythmia "can happen very, very quickly … within minutes, probably even less than minutes").

Once the dialysis treatment concludes, the "rapid" electrolyte shifts also cease. The SAC acknowledges that serum bicarbonate levels decrease between dialysis sessions; indeed, a fundamental goal of dialysis is to raise the patient's serum bicarbonate level in order to provide sufficient buffer stores to balance out acids generated by the patient during the days between treatments. See SAC ¶¶ 76-80, 85, 95. This "saw-tooth" serum bicarbonate pattern is well-documented in dialysis treatises and acknowledged by Plaintiffs' own experts:

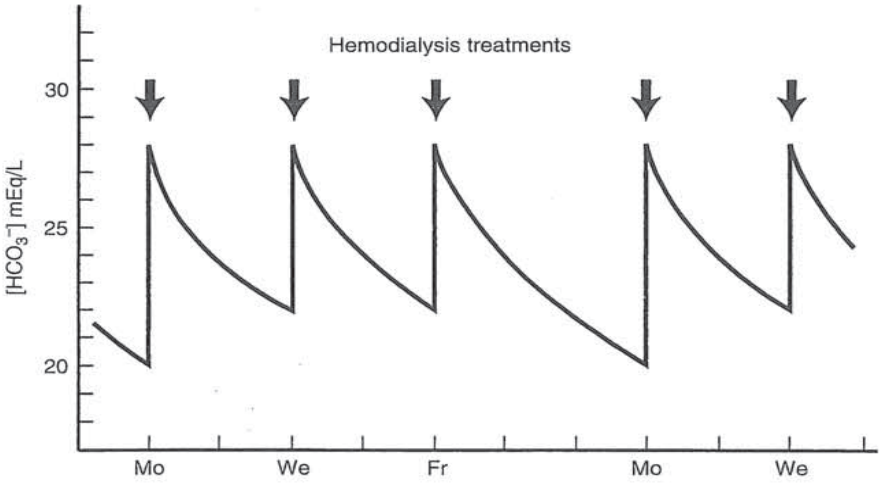

FIGURE 26.3 Schematic representation of the pattern of serum [HCO_3^-] in a patient receiving hemodialysis treatments thrice weekly (Monday, Wednesday, and Friday). Serum [HCO_3^-] rises with each dialysis, and then falls during the interval between treatments, reaching a nadir once a week at the end of the long interval between treatments.

SOF ¶¶ 46-52.

Dr. Borkan is the only expert who offers the opinion that the acetate in GranuFlo® and NaturaLyte® can continue to cause electrolyte shifts several hours after dialysis that could

trigger an arrhythmia. SOF ¶ 53.

At his deposition, he claimed that he could not identify how many hours after the end of dialysis the peak in serum bicarbonate could occur.[4] SOF ¶ 54.

When Dr. Borkan's opinions on the alleged bicarbonate "spike" after dialysis were probed at the trial in Dial, however, he was unable to identify any specific data to support his conclusions.

Dr. Borkan testified generally that "recent studies suggest … that a higher dialysis bicarbonate bath actually has a bigger effect during and in the hours after dialysis than it has an effect on the pre-dialysis bicarbonate," but he did not identify those studies. SOF ¶ 58. Further, he acknowledged that "most patients … clear the acetate from their bloodstream and go back to their baseline low level … within 30 to 60 minutes of finishing the procedure." SOF ¶ 59.

[4] Previously, Dr. Borkan had testified that there would be a "defined period when it would be biochemically feasible to ascribe the untoward event to that spike in bicarbonate caused by Granuflo exposure." SOF ¶ 55. Dr. Borkan also previously testified that the general practice in nephrology is not to obtain blood chemistries on dialysis patients within the four to six hours after the dialysis treatment because "[t]here is no standard of care for responding to changes in blood chemistries in the four to six hours immediately after the procedure, for the reason that those blood chemistries reflect the dialysate more than they do equilibrium values for the patient." SOF ¶ 56; see also Ex. 18, Borkan Dep., pp. 117-118 (opining that "the most important parameters during those restricted hours of dialysis and the few hours afterwards are the dialysis procedure itself").

Significantly, as noted above, even Dr. Hakim testified that the body would no longer be metabolizing acetate 90 minutes after dialysis, and serum bicarbonate levels would be decreasing by then. SOF ¶ 4. Further, Plaintiffs' cardiology expert Dr. Akar testified that "the rate of conversion" from acetate to bicarbonate in the liver "is very instantaneous." SOF ¶ 61; see also id. at 207:15-21 ("once the acetate goes to the liver it gets converted fairly quickly"). Dr. Aroesty similarly testified that conversion of acetate to bicarbonate generally "starts fairly quickly," within 20-30 minutes. SOF ¶ 62. In addition, several studies, including studies cited by Dr. Borkan, demonstrate that acetate is metabolized quickly after dialysis was completed, even for those patients with the slowest acetate metabolism. SOF ¶¶ 63-66.

Once the alleged "trigger" of a rapid electrolyte shift occurs during or soon after dialysis, the injury event happens almost immediately under Plaintiffs' cardiologists' theory of causation.

At his deposition, Dr. Eldadah testified that "ventricular arrhythmia actually presents in a very classic way" – "as sudden collapse often with no prodrome." SOF ¶ 32. He described it as "a sudden switching off of the human being and collapse and then death" that occurs within "a short period of time." Id. Dr. Zipes similarly confirmed at his deposition that a patient who experiences ventricular fibrillation "will lose consciousness very rapidly." SOF ¶ 45. By definition, the "sudden cardiac arrest" and "sudden cardiac death" that Plaintiffs' cardiology experts attempt to link to the effects of the acetate contained in GranuFlo® and NaturaLyte® occurs suddenly, in close temporal proximity to the triggering electrolyte shift. Plaintiffs' experts define SCA and SCD as an event that

happens suddenly to a patient who appeared well within an hour before the event. SOF ¶¶ 22, 40, 43.

D. Opt-Out Cases Subject to This Motion

5

III. LEGAL STANDARD FOR SUMMARY JUDGMENT

"Summary judgment is appropriate when" the record shows that "there is no genuine issue as to any material fact and that the moving party is entitled to a judgment as a matter of

6

law." Pagano v. Frank, 983 F.2d 343, 347 (1st Cir. 1993) (quoting Fed. R. Civ. P. 56(c)). When a defendant moves for summary judgment based on a lack of evidence supporting the plaintiffs' claim, the plaintiffs "must present definite, competent evidence to rebut the motion" and cannot merely rest on "conclusory allegations, improbable inferences, and unsupported speculation." Id. If the plaintiffs' theory of liability is unsupported, summary judgment should be entered for the defendant. See, e.g., Geshke v. Crocs, 740 F.3d 74, 77 (1st Cir. 2014); see also Koken v. Black & Veatch Constr., 426 F.3d 39, 49 (1st Cir. 2005) ("When there is so little evidence tending to show a critical element of a plaintiff's claim that the jury would have to speculate in order to return a verdict for the plaintiff, a defendant is entitled to summary judgment.").

IV. ARGUMENT

Under any substantive law relevant to this motion, causation is an essential element of Plaintiffs' product liability claims. See In re Norplant Contraceptive Prods. Liab. Litig., 215 F. Supp. 2d 795, 830 (E.D. Tex. 2002) (noting "[t]he causation requirements in failure to warn claims are similar in all United States jurisdictions"); In re Mirena IUD Prods. Liab. Litig., 202 F. Supp. 3d 304, 310 (S.D.N.Y. 2016) ("As in any products liability or personal injury action, Plaintiffs must prove causation."). To prove causation in a mass tort products liability action, Plaintiffs must proffer evidence of both (1) general causation – that is, that the product is capable of causing their alleged injuries; and (2) specific causation – that the product did, in fact, cause the injury in each individual case. Id.; see also, e.g., In re Neurontin Marketing, Sales Practices, & Prods. Liab. Litig., 612 F. Supp. 2d 116, 123 (D. Mass. 2009); In re Zoloft Prods. Liab. Litig., 176 F. Supp. 3d 483, 491 (E.D. Pa. 2016); In re Breast Implant Litig., 11 F. Supp. 2d 1217, 1224 (D. Colo. 1998) (citing cases from many jurisdictions).

In a medical drug or device products liability case, evidence of general causation must be established through expert testimony. In re Zoloft, 176 F. Supp. 3d at 491; In re Mirena, 202 F.

Supp. 3d at 311; In re Norplant, 215 F. Supp. 2d at 830. A defendant such as FMCNA can demonstrate that there is no genuine issue of material fact as to causation by showing an absence of evidence concerning general causation. In re Norplant, 215 F. Supp. 2d at 830.

A. Patients Who Lack Evidence of an Electrolyte Shift-Related Arrhythmia Cannot Demonstrate Causation.

At the outset, as discussed above, the Hakim Memo focused on a specific type of event – cardiopulmonary arrest. The conclusions Dr. Hakim drew about health "risks" purportedly attributable to acetate in the dialysate, and the risks that Plaintiffs claim FMCNA had a duty to warn of, likewise are tied to that specific type of event. The Hakim Memo did not review instances of sepsis (severe infection), blood clots, myocardial infarction, or any other non-electrolyte-related issue and did not associate any risks for these conditions with acetate. In other words, such outcomes would not have been addressed even in the warning Plaintiffs claim FMCNA was required to give. Patients who experienced these outcomes are outside the scope of the core failure-to-warn theory in this litigation.

Further, the submissions and testimony of Plaintiffs' cardiology experts make clear that Plaintiffs' theory of general medical causation requires a very specific mechanism before any patient's alleged injury potentially could be linked to GranuFlo® or NaturaLyte® – a cardiac arrhythmia triggered by an electrolyte shift. Non-cardiac events, such as sepsis, plainly are not within the scope of this theory. Likewise, cardiac events that are not arrhythmic in nature, or that involve arrhythmias due to triggers other than electrolyte shifts, also are out-of-bounds. For patients who have experienced such events, Plaintiffs cannot meet their burden to establish general causation through expert testimony, and FMCNA is entitled to summary judgment.[7]

[7] Plaintiffs' counsel are participating in the CBO and are bound by the general causation expert opinions previously submitted on their behalf in this MDL in 2015.

Several plaintiffs subject to this motion are seeking to pursue claims based on alleged injury events where a documented cause is sepsis, a condition that is not even cardiac in origin.

Other opt-out cases involve patients who experienced myocardial infarctions (heart attacks) due to severe blockages and coronary artery disease, not an electrical issue that potentially could be related to their dialysis treatment.

8

This is not the type of "sudden" demise following a "rapid" shift in electrolytes described by Plaintiffs' experts. Rather, these patients' medical records reflect blockages that had nothing to do with dialysis.

Plaintiffs have one cardiology expert, Dr. Miles, who opines in cursory fashion that GranuFlo® and NaturaLyte® could contribute to "myocardial infarction and stroke." SOF ¶ 33. His opinions, however, do not provide any valid basis for expanding Plaintiffs' theory of causation to include patients who did not experience an arrhythmia triggered by an electrolyte shift. Plaintiffs' other cardiology experts have explained and confirmed the distinction between myocardial infarction – which is generally caused by a blood clot – and arrhythmias related to an electrical issue affecting the heart. See p. 8 above. Dr. Miles does not claim that NaturaLyte® and GranuFlo® cause blood clots. Rather, at his deposition, he confirmed that he too is focused on "ion fluxes." SOF ¶ 35. There is no evidence the patients discussed above had arrhythmias due to those electrolyte changes, and summary judgment should be entered in favor of FMCNA on their claims.

B. Patients Whose Injury Event Occurred Several Hours After Dialysis Also Could Not Have Been Harmed By GranuFlo® or NaturaLyte®.

In addition, Plaintiffs must establish that the timing of the alleged injury event was in close proximity to the patient's last dialysis treatment before the injury potentially could be linked to GranuFlo® or NaturaLyte®. Again, Dr. Hakim's "findings," which Plaintiffs claim

FMCNA was required to disseminate broadly to satisfy its duty to warn, pertained to in-center arrests. Events that occurred hours after dialysis, outside the clinic, were not within the scope of these "findings" and are not within the scope of the alleged duty to warn.

Further, Plaintiffs have presented no data, science, or other evidence that GranuFlo® or NaturaLyte® could cause a patient to suffer a cardiac arrest at home or while otherwise conducting everyday activities of daily life, seven or more hours after dialysis. Rather, their cardiology experts uniformly rely on "rapid" electrolyte shifts that occur during dialysis as the "trigger" for arrhythmia, and further agree that the arrhythmia would occur "suddenly" once triggered. See p. 9 above.

Given the significant lapse of time between the termination of dialysis and the injury event in these cases, an electrolyte shift related to dialysis cannot be the cause of the alleged injury.

Further, in addressing the specific electrolyte shifts relevant to Plaintiffs' theory of causation, Dr. Akar

acknowledged that the conversion of acetate to bicarbonate in the body is "instantaneous," and intracellular shifting of potassium also occurs "within minutes, probably even less than minutes." SOF ¶¶ 14, 61. Thus, his testimony is consistent with the conclusion that an arrhythmia that occurred seven to nine hours after dialysis (the timing in three of the opt-out cases) also would not be attributable to the specific "trigger" at issue in this case.

Similarly, Dr. Borkan's bicarbonate "spike" theory, which posits that some patients metabolize acetate so slowly that their serum bicarbonate levels still could be increasing several hours after dialysis, does not save these plaintiffs' claims. First, Dr. Borkan's opinion is contrary to other evidence, including testimony from Dr. Hakim himself that that the body would no longer be metabolizing acetate 90 minutes after dialysis. SOF ¶ 4. It also is contrary to published literature and data. For example, Dr. Borkan cites certain studies on acetate metabolism conducted using "acetate-only" (i.e., without any bicarbonate in the dialysate) dialysis, but none of them provide evidence of elevated acetate concentration or a "bicarbonate spike" occurring several hours after the end of the dialysis treatment. While the studies did show that acetate could accumulate in the serum during the course of dialysis, they also demonstrated that such acetate was metabolized quickly after dialysis was completed, even for those patients with the slowest acetate metabolism. SOF ¶¶ 63-64. For example, in a study by Desch, the authors observed that "[t]here was a very important and rapid fall in acetate arterial concentration during the first 20 min after the end of the dialysis" and that "[a]cetate levels returned to the predialysis values in less than 40 min after dialysis (Fig. 3)." SOF ¶ 65. A study by Richards likewise identified one of seven patients who exhibited slow acetate metabolism, never reaching a steady-state acetate concentration and exhibiting slower rate of acetate disappearance than the others. SOF ¶ 66. But even that patient's serum acetate concentration dropped quickly, falling

from 11 mEq/L to just over 2 mEq/L in the first hour after the end of dialysis. SOF ¶ 66. Similar observations of rapid decreases in post-dialysis acetate concentrations were made in the other studies. SOF ¶¶ 63-64. None of the studies cited by Dr. Borkan showed that patients maintained an elevated acetate concentration capable of generating a "bicarbonate spike" more than two hours after dialysis, let alone the seven-plus hour interval involved in the opt-out cases at issue here.

Likewise at the trial in Dial, Dr. Borkan offered no specific data – and certainly no scientifically validated data – to support his view that a "peak spike" can occur many hours after dialysis. SOF ¶ 54. Dr. Borkan testified that "most patients" clear any residual acetate that is left in the blood "within 30 to 60 minutes" after dialysis. SOF ¶ 59. There is no evidence in the available medical records in any of the opt-out cases subject to this motion that they are "slow metabolizers" of acetate. In sum, there is no basis for extending Plaintiffs' theory of general causation to patients whose alleged injury occurred long after their last dialysis session was complete. Cf. Wells v. SmithKline, 2009 WL 564303, at *6 (W.D. Tex. Feb. 18, 2009) (plaintiff cannot establish specific causation if he or she is not "similarly situated to the participants" in the studies used to demonstrate general causation), aff'd, 601 F.3d 375 (5th Cir. 2010).

Finally, it is significant that the Hakim Memo provided the road map not only for Plaintiffs' theory of medical causation, but also for the parameters of FMCNA's alleged duty to warn (see SAC ¶¶ 208-211, 217, 221-223). As the memo addressed only in-center cardiopulmonary arrest events, injuries of other types at other times – like those involved in this motion – would not have been addressed even in the warning Plaintiffs claim FMCNA was required to give. This underscores the incompatibility of these cases with Plaintiffs' theory of liability and further confirms that FMCNA is entitled to summary judgment.

Dated: September 15, 2017

Respectfully submitted,

/s/ James F. Bennett

James F. Bennett
Megan S. Heinsz
DOWD BENNETT LLP
773 Forsyth Blvd., Suite 1900
St. Louis, MO 63105
(314) 889-7300
(314) 889-7302 (fax)
jbennett@dowdbennett.com
mheinsz@dowdbennett.com

William H. Kettlewell (BBO # 270320)
Maria R. Durant (BBO # 558906)
Sara E. Silva (BBO # 645293)
COLLORA LLP
100 High Street, 20th Floor
Boston, MA 02110
(617) 371-1000
(617) 371-1037 (fax)
wkettlewell@collorallp.com
mdurant@collorallp.com
ssilva@collorallp.com

Leigh Anne Hodge
BRADLEY ARANT BOULT CUMMINGS LLP
One Federal Place
1819 Fifth Avenue North
Birmingham, AL 35203
(205) 521-8000
(205) 521-8800 (fax)
lhodge@babc.com

Juanita Brooks
FISH & RICHARDSON
12390 El Camino Real
San Diego, CA 92130
(858) 678-5070
(858) 678-5099 (fax)
brooks@fr.com
Counsel for FMCNA

CERTIFICATION OF SERVICE

I hereby certify that a true and correct copy of the foregoing document was served on Plaintiffs' counsel by e-mail on September 15, 2017, to:

mollyb@hbsslaw.com

matt@sill-law.com

dunbarwatt@gmail.com

/s/ James F. Bennett